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SITE NAME

REFERENCE Altamira
SITE NAME Altamira
SITE ID 120980 497414

SITE ID

[illegible]

NATURAL RESOURCES BUILDING
URBANA, ILLINOIS 61821

JOHN C. PAUL, CHIEF

RECEIVED

February 14, 1967

Mr. C. W. Kleson
Chief Sanitary Engineer

Illinois Department of Public Health
Springfield, Illinois 62762

FEB 15 1957

EPA Region 5 Records Ctr



288691

Under the Allegations

In re Madison County - Sanitary
Landfills for City of Alton

This is in response to your request of January 26, 1967, for a geologic evaluation of a proposed sanitary landfill site for the City of Alton. The proposed site is the property of the old Alton Brick Company, located on a 120 acre plot in the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 35, T. 6 N., R. 10 W., Madison County. A field inspection of the area was made on February 10, 1967. The portion of the company property in Section 36 was not inspected as this area is not presently being considered for a sanitary landfill site.

The proposed landfill site is the abandoned clay pit situated in the center of the property, in an excavation estimated to cover about 40 acres and about 70 to 90 feet deep. The bottom of the pit is flat with the exception of piles of clay and shale waste about 25 feet high mounded on the edges of the pit. The sides of the pit have slumped inward to create steplike terraces around the periphery of the pit.

The exposed geologic section in the clay pit is comprised of a sequence of loess, sand and glacial till, overlying shale, coal and sandstone. The floor of the pit at present is clay waste about two feet thick; beneath the waste, sandstone should be present. The observed geologic section and estimated thicknesses are as follows:

Top of clay pit near the main building, elev. 620 ft. Estimated Thickness
(feet)

Loess, yellowish brown, clay silt	15 to 20
Sand, very fine, yellowish brown	1 to 2
Till, grayish brown, green tint, pebbly clay	10 to 15
Shale, black, carbonaceous, grading into thin bedded brown shale	5 to 10
Sandstone, light grayish brown, very micaceous, shaley, interbedded with thin beds of shale and clay	20 to 30

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Boring logs of the site indicate a similar sequence and the presence of the Mississippian strata. The following driller's log is from the vicinity of the clay pit.

Alton Brick Company

SE $\frac{1}{4}$, NE $\frac{1}{4}$, SE $\frac{1}{4}$ Section 35, T. 6 N., R. 10 W. Elevation 637.7 feet

Strata	Thickness	Depth
Clay (loess)	23	0-23
Clay and gravel (till)	2	23-30
Clay shale (till)	44	30-74 -
Clay shale	7	74-81
Shale, blue	14	81-95 -
Sandy shale	6	95-101
Shale, blue	7	101-108
Coal	2	108-110
Clay shale	3	110-113
Limestone	5	113-118
Clay shale	12	118-130
Coal	1	130-131
Sandstone	15	131-145
Limestone (Top Mississippian)		146

The limestone is encountered at a depth of about 145 feet or an elevation of about 491 feet above sea level, which would indicate that the Mississippian would be about 60 feet below the floor of the clay pit. The Mississippian strata would be the only strata that would be used as an aquifer in the vicinity of the clay pit.

Previous investigation of the site indicated the presence of a number of springs. These springs are contact springs which flow or seep from a thin sand between the loess and the till. Water from the seeps was probably instrumental in the slumping of the sides of the pit. The present level of the upper slump terrace is approximately the level of the contact zone. This level is marshy throughout the year as indicated by the presence of cattails. At one spot on the side of the pit one of these springs was gauged at about one half gallon per minute. The total amount of flow from the springs is not known. There is no standing water on the base of the clay pit in the area where the clay was removed, which indicates that water from the springs and from precipitation is apparently entering the underlying strata. Standing water is present in considerable quantity in the area of the clay hoppers. This water is backed up behind a small clay shale dam. It is believed that if the dam were breached the area under the clay hoppers would be drained naturally. There are remnants of a tile drainage system on the floor of the excavation. Surface flow is routed through culverts to the northwest part of the pit where it entered a small ravine draining to the east. On the bank of the ravine, there is an abandoned shaft or well in which the static level of water was measured. The water level is about eight feet below the surface at this point which is about ten feet below the level of the floor of the clay pit. It is estimated that the static water level would be five to ten feet below the base of the clay pit.

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Surface water in the excavation is believed to be of poor chemical quality. This is indicated by the coating of iron oxide it imparts to strata it flows over, the almost complete dissolution of limestone fragments in the pit, and a very acrid taste.

The principal aquifers in the area are the shallow sand at the base of the loess and the Mississippian limestones. There are no records of any wells in the area which utilize either aquifer. The City of Alton water system apparently utilizes river water and serves the area as far north as the brick works. The old Alton Brick Company utilized city water when it was in operation.

In summary, the potential for pollution of any ground-water supplies presently being used, is very low. Mississippian strata, which possibly could be considered to be an aquifer in this area, lie about 60 feet below the base of the pit. There are indications that water is entering the ground in the pit; however it is not known whether the water percolates downward or moves horizontally over an impermeable layer. It is doubtful that the water moves downward very rapidly, if at all, due to the impermeable character of the strata above the Mississippian.

Yours very truly,

Murray R. McCann

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